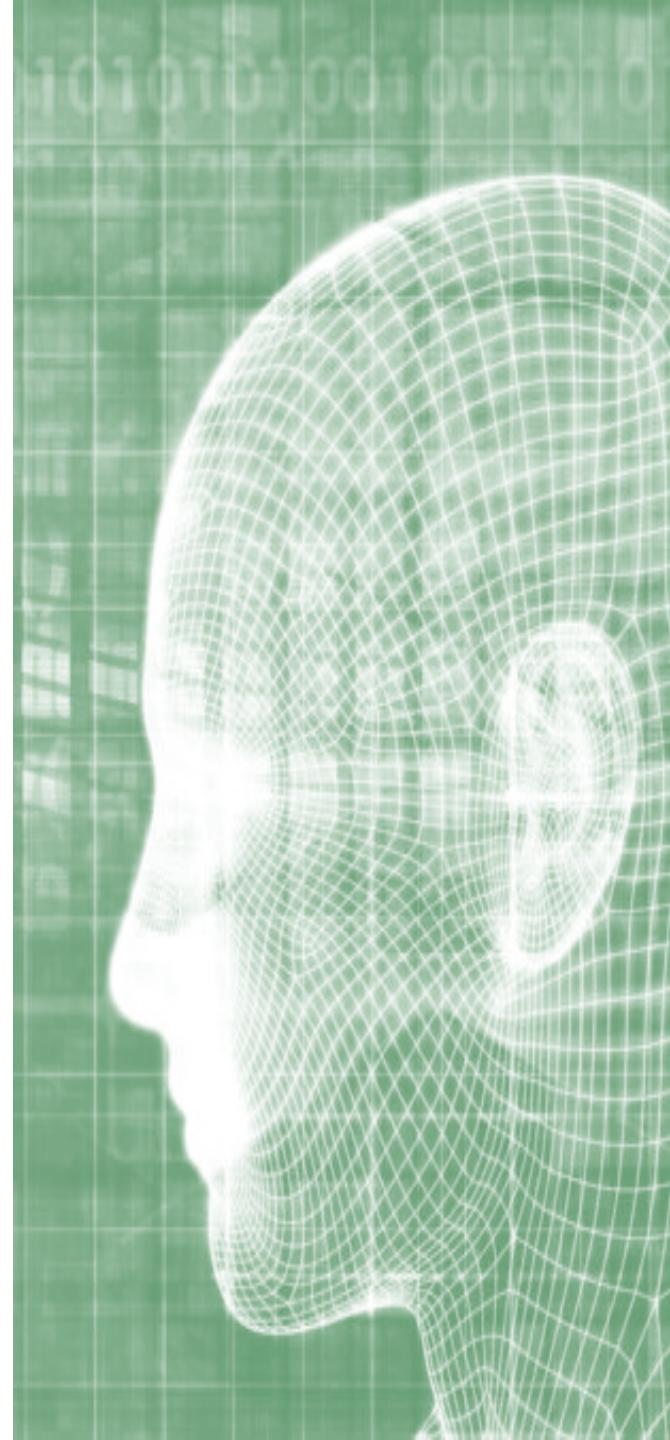


# eleven | Central-Essec - Data Augmented Proposal Challenge

To the attention of the Data Science  
& Business Analytics students

February 19th, 2024



# Your preferential interlocutors today



**Victor Pierre**

Case Team Leader

**Tech & Digital skills**

Artificial Intelligence  
Computer Science  
Machine Learning

**Sectorial Expertise**

Software and Data  
Retail  
Asset management

**Education**



CentraleSupélec



**Pierre Lavieille**

Consultant

**Tech & Digital skills**

Deep Learning  
Computer Vision  
Cloud

**Sectorial Expertise**

Energy & Utilities  
Software and Data  
Cybersecurity

**Education**



ÉCOLE  
POLYTECHNIQUE  
UNIVERSITÉ PARIS-SACLAY



HEC  
PARIS

Dauphine | PSL

# AGENDA



1. About eleven
2. Structure of a commercial exchange
3. Case presentations
  - a) The Invit(ai)tion
  - b) The Endless Line
4. General information
  - a) Expected output
  - b) Practical information



eleven is Europe's first ever specialist strategy firm **specifically founded to accompany clients' transformation through the AI and digital revolution**, thanks to a unique combination of strategy perspective and hands-on approach

**eleven**  
strategy • data • digital

### DIGITAL & AI STRATEGY SPECIALIST

### STRATEGY X HANDS-ON POSITIONING

*Supporting C-level executives and organizations from strategic ignition to project scale-up and*

### A UNIQUE BLEND OF SKILLS

*and data science ones, thanks to its 50+ consultants that master the continuously evolving*

### DISTINCTIVE ENTREPRENEURIAL MINDSET

*We provide issue-based methodologies centered on your business needs*

### CSR AT THE CORE OF OUR DNA

*Our approach enables our clients' projects to meet CSR expectations. Both financial and CSR impacts are tracked, proven and reported thanks to our mastering of digital and AI levers*

eleven support companies in **five main fields of intervention**, while enabling its clients to reach the state-of-the-art in these areas thanks to its **unique ecosystem**

### Overview of eleven's five main fields of intervention



Sources: eleven research and analysis

eleven serves top large cap clients and leading mid cap players across several key industries as well as leading International large cap and mid cap Private Equity funds

eleven's key references

Corporates



Private Equity



eleven's digital clubs gather two unique communities in e-commerce and AI, providing its clients with a direct access to experts from best-in-class players and to distinctive market data

## Digital clubs : a unique and direct access to experts & partners

500+ members at the forefront of e-commerce

An exclusive network in continuous activation...

- ✓ 1 to 2 exclusive events per month
- ✓ Slack community
- ✓ Training & coaching sessions
- ✓ Etc.



40+ sponsors and partners at the core of e-commerce and AI ecosystems

## LES RENCONTRES DATA & IA

Réunir les leaders de la donnée

Echanger avec vos pairs, découvrir des nouvelles tendances, partager des réussites comme des échecs, le tout dans un cercle restreint, convivial et confidentiel



>40 members of top data x innovation executives within corporates and funds

... delivering to our clients a unique direct access to:

- ✓ Experts from best-in-class players in e-commerce and AI
- ✓ Market data of up-to-date online performance metrics encompassing multiple industries

eleven together **exceptional talent** in **strategy**, **business**, **engineering** and **data science** to help our clients tackle today's most vexing issues and to pursue the digital age's most promising opportunities

## STRATEGY



## DATA SCIENCE

## BUSINESS

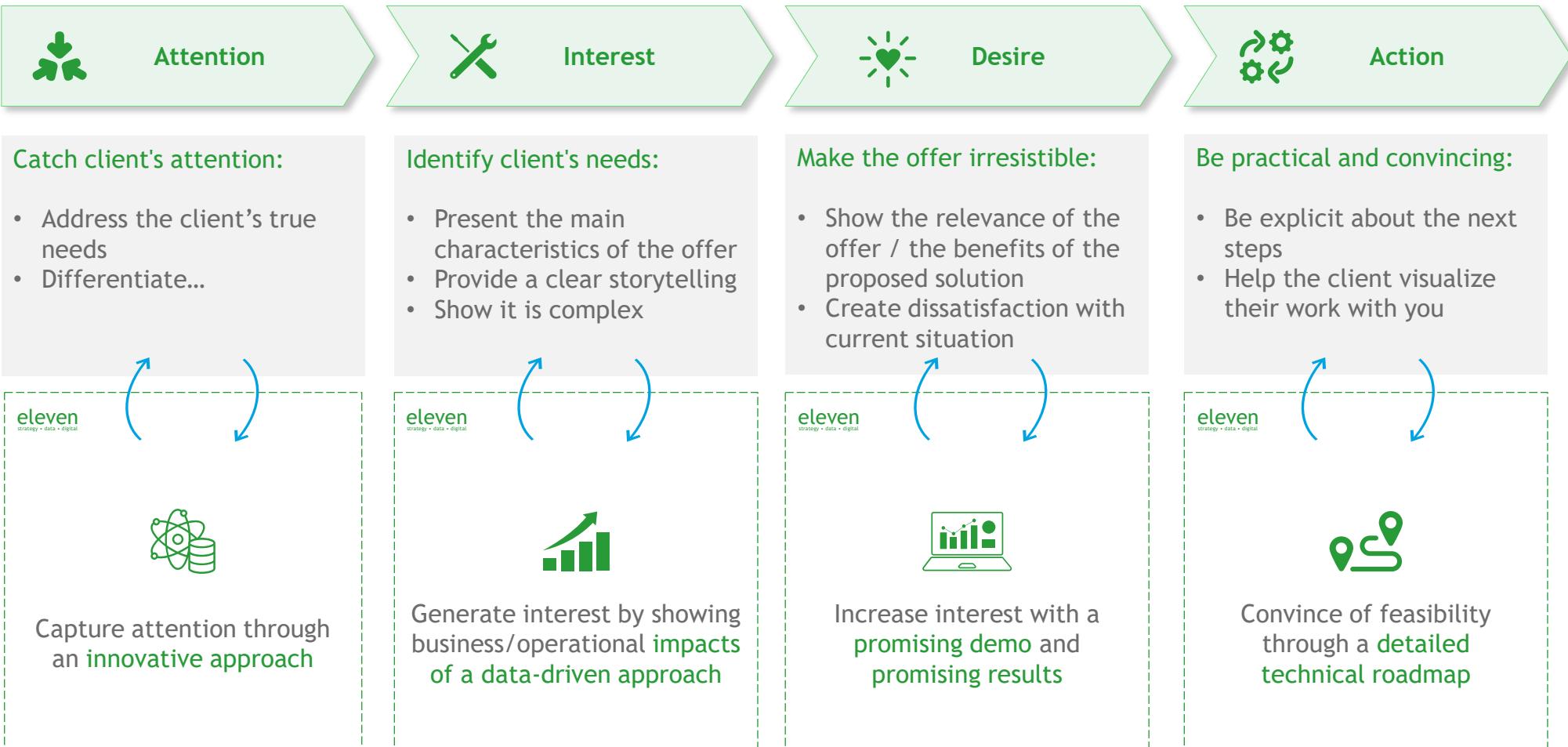
## ENGINEERING



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Based on a major sales concept: AIDA, eleven relies on its **unique expertise** to provide **innovative solutions** to clients' problems



**Key  
elements**

✓ Data enriches the discourse and makes it more effective at each stage of a commercial proposal

# Your mission: structure a data-augmented commercial exchange

You are expected to deliver the following:

- Your code used to solve the use case, including any relevant dashboard, data analysis, model training, etc. This code should be readable by anyone, with a clear *Readme*, *requirements*, potential *quickstart.py*, etc.
- A “client-ready” PowerPoint presentation of your work, structured as follows:

1

**Context & Objectives:** what do you understand from the project? Why is the context very complex?



- ✓ Present your understanding of the situation
- ✓ Include the process, the needs, the potential ROI, etc.

➤ c. 2/3 slides

2

**Key Success Factors:** what would be the reason of your success?

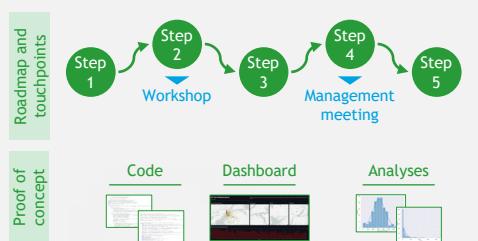
KSF	WHY?	HOW?
Business oriented		
Hands-on approach		
etc.		

- ✓ Explain the reasons of success: strong interaction with client? Deep expertise in AI?

➤ c. 1 slide

3

**Proposed methodology:** what could you do for the potential client?

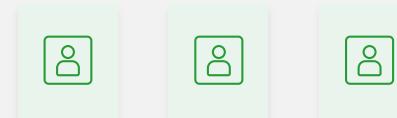


- ✓ What you could do, how, what you have already done, any relevant insight to prove your expertise and how much time do you need for the mission!

➤ c. 6/8 slides

4

**Team:** who are you and what have you done? Why are you relevant to solve the case?



- ✓ Introduce yourself, your background and explain why you are relevant for this mission

➤ c. 1 slide

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# eleven augmented proposal challenge: deliver a convincing commercial exchange to your prospect leveraging your dual expertise in business and data science



## Exercise:

- ✓ Make groups of 5/6 people
- ✓ Choose among the 2 available topics
- ✓ On your topic, put yourself in a data consultant's shoes during a 1<sup>st</sup> commercial exchange:
  - ✓ What is the **context** of the company? (value chain, competition, technological trends, etc.)
  - ✓ How could you generate **added-value for them using potential of new technological enablers**? (e.g., time-series, machine learning for tabular data, NLP, etc.)
  - ✓ How will the mission be **structured**? (roadmap, key steps, meeting with management, etc.)
  - ✓ Can you make a first assessment of the **feasibility** of your solution? (data visualization, 1<sup>st</sup> demo, etc.)
  - ✓ How will you leverage the results to provide **key business insights**?
- ✓ Note that the best solution for your client **may not be the development of a custom-made solution**, but could be the acquisition of a company, some key partnerships, etc.
- ✓ **Synthesize your work** in a commercial exchange (up to 20 slides)
- ✓ **Upload your work** on the Sharepoint (presentation, code, etc: see details at the end of this presentation)
- ✓ **Present to the jury** and prepare for questions



### The Invit(ai)tions

How to generate the best guest list?



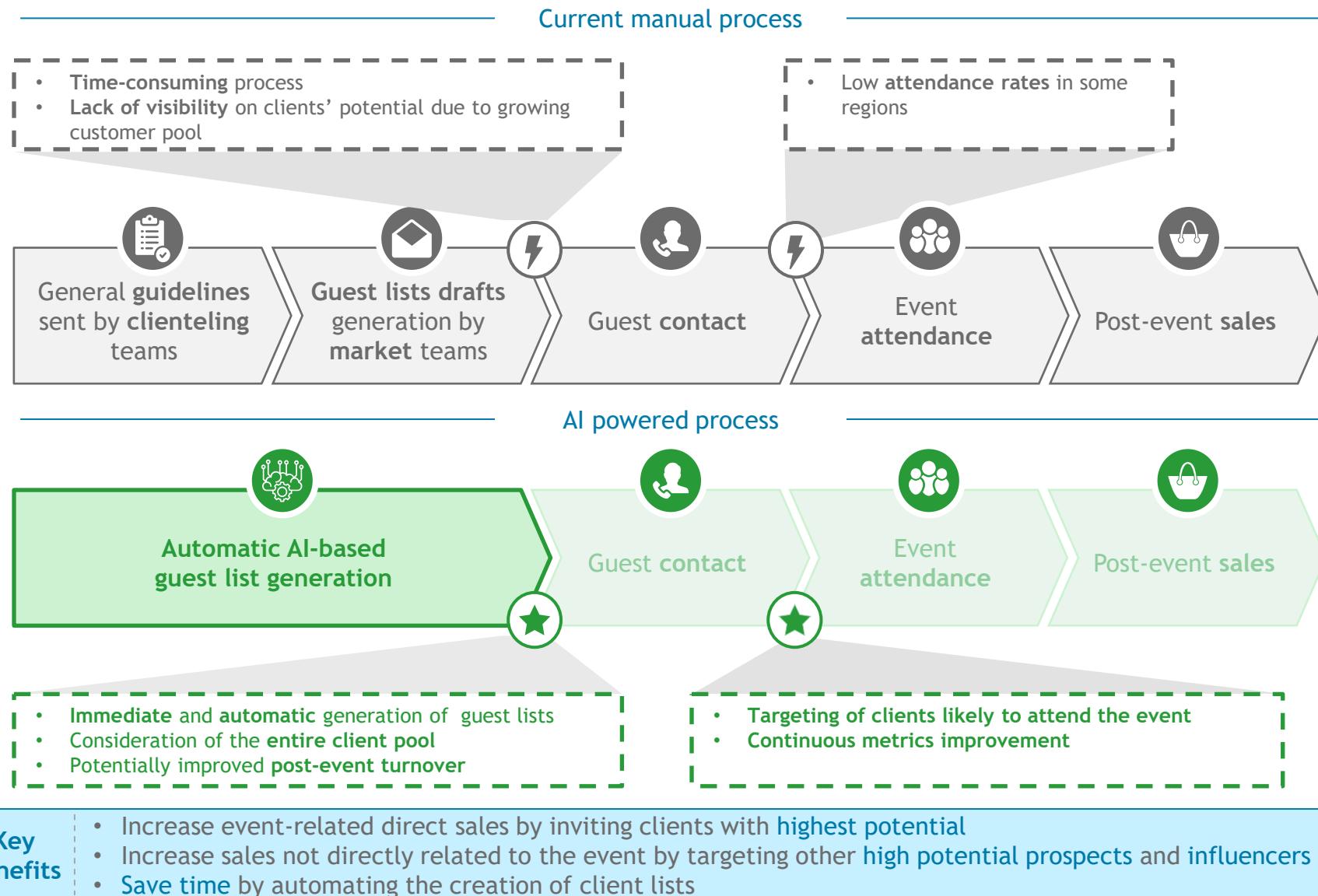
### The Endless Line

How to forecast waiting times in a theme park?

# The Invit(ai)tions

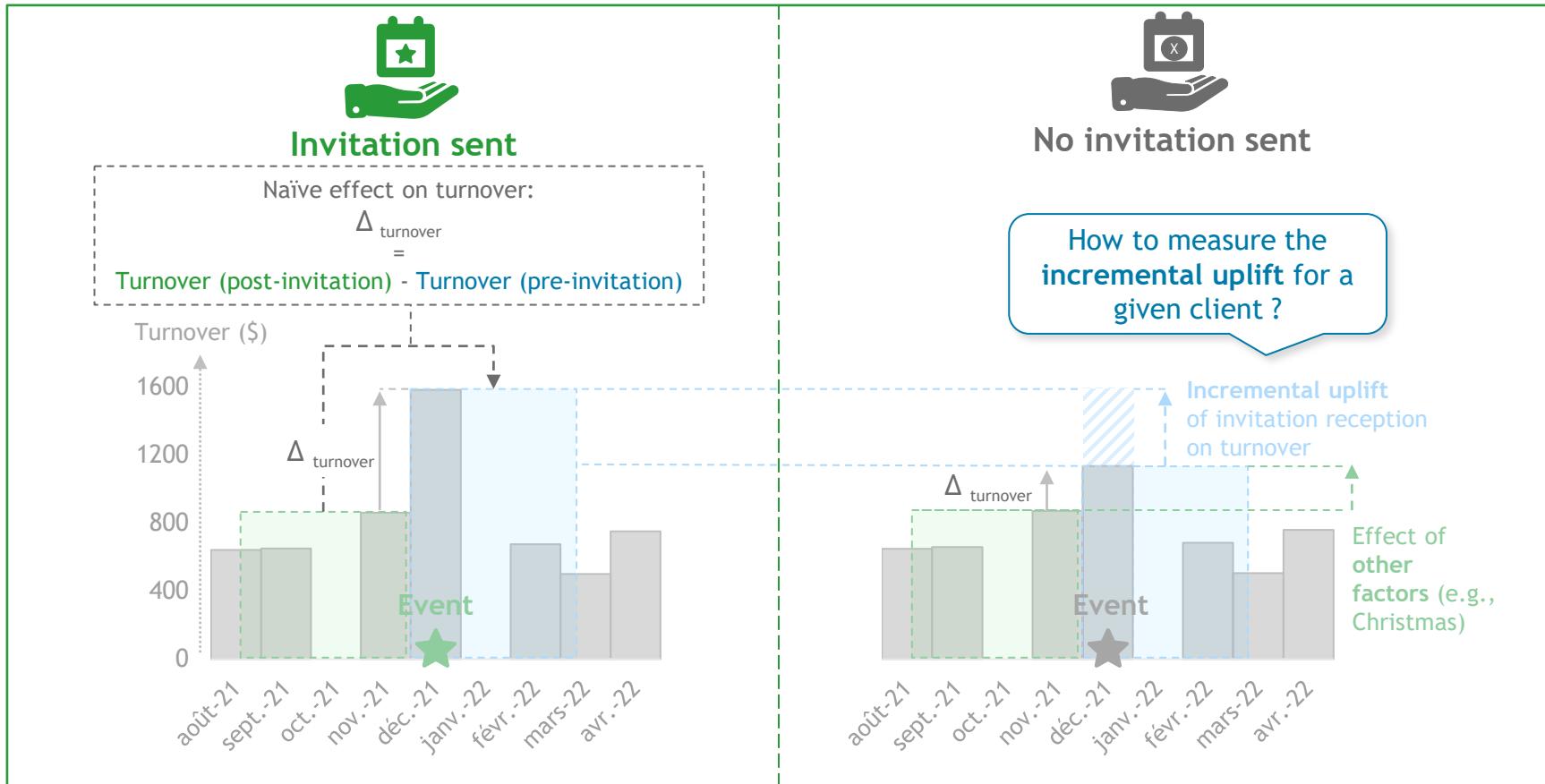
Selecting the best clients to invite for a marketing action

**Context:** the potential client, a player in luxury industry, **wants to improve the performance of marketing actions** (invitation to event) based on artificial intelligence



**Context:** An important challenge is to be able to measure an **event's effect** on the **incremental post-event turnover**

How to isolate the incremental effect of inviting a specific client ? — For illustration purposes



A trade-off must be found between:

1. Clients bringing **high** post-event incremental turnovers but not necessarily due to the event
2. Clients with **lower** post-event incremental turnovers but with better event-related conversion

**Objectives:** The client wants to correctly estimate the effect of a marketing action (i.e., sending an email) to increase client turnover

## Scope of the case study

1

Who are the client with most potential  
and high post-event incremental  
turnovers to send an invitation to?

2

How to **leverage** this information to give strategic recommendations to the client?



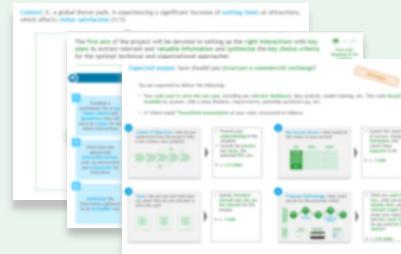
## Deliverables



1. The code used to build the demo tool



2. A visual dashboard to present the results to the client



3. A “client-ready” deck of **PowerPoint slides**

**Available data:** you have access to **past transactions**, **clients** data and information about **events**



**Goal:** Target the best clients of this company specializes in the sale of luxury clothing to send them private invitations as part of the marketing campaign



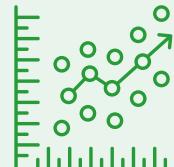
Isolate the incremental effect of the marketing action on the increase in client's turnover



Data Analytics



Clustering



Regression



Causal ML

...

You have access to three datasets to perform your analyses and build your models



transactions.csv



clients.csv



actions.csv



Relevant external data can complete those three datasets



Available data: past information are provided for each transactions in *transactions.csv*

Client information		Transaction information			Product information		
client_id	transaction_id	transaction_date	product_quantity	gross_amount_euro	product_category	product_subcategory	product_style
c17974679	t11288118	25/07/2020	1	3044	Women Ready-to-Wear	Unknown	Casual Style
c17974679	t93389142	20/06/2020	1	569	Women Accessory	Unknown	Stylish Fashion
c17974679	t62924895	13/01/2021	1	7727	Women Bags	Unknown	Leather
c17974679	t93389142	20/06/2020	1	3954	Women Ready-to-Wear	Unknown	Casual Style
c17974679	t33368160	03/05/2021	1	1541	Women Ready-to-Wear	bottom segment	Casual Style
c17974679	t60765965	24/12/2020	1	419	Women Accessory	Unknown	Stylish Fashion
c17974679	t69198619	21/05/2020	1	1425	Women Accessory	Unknown	Sporty
c17974679	t90196428	19/05/2021	1	750	Women Accessory	Unknown	Stylish Fashion
c17974679	t74455141	22/05/2020	1	4054	Women Bags	Unknown	Leather
c17974679	t93453249	26/10/2020	1	1189	Women Accessory	Unknown	Canvas Style
c17974679	t74455141	22/05/2020	1	1442	Women Ready-to-Wear	Unknown	Casual Style
c17974679	t91062614	23/06/2020	1	798	Women Accessory	Unknown	Stylish Fashion
c17974679	t74455141	22/05/2020	1	2521	Woman Shoes	Unknown	Casual Style
c17974679	t01836523	29/07/2020	1	632	Women Small Leather Goods	Unknown	Leather
c17974679	t07471205	27/07/2020	1	893	Women Accessory	Unknown	Stylish Fashion
c17974679	t69198619	21/05/2020	1	548	Women Accessory	Unknown	N/A Style
c17974679	t93453249	26/10/2020	1	569	Women Accessory	Unknown	Stylish Fashion
c17974679	t06002231	06/03/2021	1	7977	Women Bags	Unknown	Leather
c17974679	t90196428	19/05/2021	1	4163	Women Bags	Unknown	Leather
c17974679	t71821515	12/01/2022	1	4511	Women Small Leather Goods	Unknown	Leather
c17974679	t21436257	01/08/2020	1	1525	Women Ready-to-Wear	bottom segment	Casual Style
c17974679	t11288118	25/07/2020	1	4278	Women Ready-to-Wear	Unknown	Casual Style
c83561585	t62428054	04/07/2021	1	707	Women Accessory	Unknown	Leather
c83561585	t05057259	03/01/2022	1	775	Women Accessory	Unknown	Leather
c83561585	t86650050	21/04/2020	1	4252	Women Ready-to-Wear	Unknown	Unknown Style



Available data: *clients.csv* contains details about the individual clients

### Client ID

client_id	client_country	client_gender	client_nationality	client_ctc	client_segment	client_premium_status	client_is_phone_contactable	client_is_email_contactable	client_is_instant_messaging_contactable	client_is_contactable
c41404743	BN				0	0	0	0	1	1
c65630254	CA				0	0	0	0	1	1
c89796498	NL				0	0	0	0	1	1
c03959902	SE				0	0	0	0	1	1
c39809280	BG				0	0	0	0	1	1
c08983122	KR				0	0	0	0	1	1
c89679868	SE				0	0	0	0	1	1
c36449974	EG				0	0	0	0	0	0
c61764787	KR				0	0	0	0	1	1
c35447765	AU				0	0	0	0	0	0
c47291509	BR				0	0	0	0	0	0
c13732395	CA	CAN	ETOBICOKE		0	0	1	1	1	1
c79636281	GR				0	0	0	0	1	1
c73919314	GR				0	0	0	0	1	1
c84860834	SE				0	0	0	0	1	1
c41565811	GR				0	0	0	0	1	1
c51717684	HK	HKG	屯門		0	0	0	0	0	0
c22322558	PT				0	0	0	0	1	1
c97830903	BE				0	0	0	0	1	1
c61974101	GR				0	0	0	0	1	1
c37388430	IE	IRL	CORK		0	0	0	0	0	0
c42706483	GR				0	0	0	0	0	0
c05178016	AU				0	0	0	0	1	1
c39954953	BE				0	0	0	0	1	1



Available data: *action.csv* contains all information on past marketing actions at a client granularity

Client invited & Client attended

action_id	action_type_label	action_subcategory_label	action_start_date	action_year	action_end_date	action_collection_year	action_collection	action_universe	action_category_label	action_channel	action_label	client_id	client_is_preset	client_is_invite
a654760	Collection	Collection	2022-04-07 00:00:00	2022	#####	2022	Mid-Season Jewelry Timepieces and Jewelry Retail	In store	Exclusive Offer	c23083988	1	1		
a979979	Collection	Collection	2021-10-20 00:00:00	2021	#####	2021	Sailor Collection Women's Fashion Retail	In store	Exclusive Offer	c40865409	1	1		
a803469	Collection	Collection	2020-10-29 00:00:00	2020	#####	2020	Spring Collection Men's Fashion Retail	In store	Social Gathering	c95435465	1	1		
a887515	Collection	Collection	2022-01-11 00:00:00	2022	#####	2022	Formal Retail Active Men's Fashion Retail	In store	Social Gathering	c58792918	1	1		
a233620	Collection	Collection	2021-05-27 00:00:00	2021	#####	2021	Mid-Season Jewelry Timepieces and Jewelry Retail	In store	Exclusive Offer	c34394230	1	1		
a679881	Collection	Collection	2022-03-12 00:00:00	2022	#####	2022	Spring-Summer Collection Infant and Toddler Retail	In store	Exclusive Offer	c49971684	0	1		
a417155	Collection	Collection	2021-10-20 00:00:00	2021	#####	2021	Sailor Collection Women's Fashion Retail	In store	Special Tailored Service	c86258898	1	1		
a134864	Collection	Collection	2020-05-22 00:00:00	2020	#####	2020	Fall Collection Women's Fashion Retail	In store	Exclusive Offer	c45803605	1	1		
a220527	Collection	Collection	2020-12-18 00:00:00	2020	#####	2020	Art Collection Women's Fashion Retail	In store	Exclusive Offer	c84522242	1	1		
a903284	Collection	Collection	2021-11-12 00:00:00	2021	#####	2021	Sailor Collection Women's Fashion Retail	In store	Exclusive Offer	c66937472	0	1		
a475646	Collection	Collection	2022-04-18 00:00:00	2022	#####	2022	Fall Collection Women's Fashion Retail	In store	Exclusive Offer	c42732644	0	1		
a263011	Collection	Collection	2021-08-26 00:00:00	2021	#####	2021	Winter Collection Men's Fashion Retail	In store	Exclusive Offer	c9115842	1	1		
a054715	Business Treatment	Special Client	2020-11-02 00:00:00	2020	#####	2020	Fall Collection Men's Fashion Client	Outside venue	Business Engagement	c41404743	1	1		
a702813	Collection	Collection	2020-08-06 00:00:00	2020	#####	2020	Winter Collection Women's Fashion Retail	In store	Exclusive Offer	c48942012	1	1		
a448362	Social Celebrity Action	Collection	2020-02-14 00:00:00	2020	#####	2020	Retail Action Women's Fashion Retail	In store	Lunar New Year Celebration	c4785742	1	1		
a766668	Collection	Collection	2020-03-05 00:00:00	2020	#####	2020	Timepieces Collection Timepieces and Jewelry Retail	In store	Exclusive Offer	c04639527	1	1		
a710074	Collection	Collection	2020-06-19 00:00:00	2020	#####	2020	Fall Collection Women's Fashion Retail	In store	Luxurious Fur Showcase	c74714177	1	1		
a412994	Social Celebrity Action	Collection	2021-11-19 00:00:00	2021	#####	2021	Retail Action Women's Fashion Retail	In store	Holiday Celebration	c97179880	1	1		
a757763	Collection	Collection	2021-11-04 00:00:00	2021	#####	2021	Spring Collection Men's Fashion Retail	In store	Exclusive Offer	c53227592	1	1		
a114760	Collection	Collection	2021-11-19 00:00:00	2021	#####	2021	Spring Collection Men's Fashion Retail	In store	Exclusive Offer	c35134852	0	1		
a673521	Collection	Collection	2021-11-24 00:00:00	2021	#####	2021	Spring Collection Men's Fashion Retail	In store	Exclusive Offer	c53227592	0	1		
a049423	Collection	Collection	2020-12-16 00:00:00	2020	#####	2020	Sailor Collection Women's Fashion Retail	In store	Social Gathering	c27838003	1	1		
a616300	Social Celebrity Action	Collection	2021-12-11 00:00:00	2021	#####	2021	Retail Action Women's Fashion Retail	In store	Holiday Celebration	c87251702	1	1		
a727548	Collection	Collection	2020-10-26 00:00:00	2020	#####	2020	Sailor Collection Women's Fashion Retail	Outside venue	Outdoor Event	c82410792	1	1		
a219630	Collection	Collection	2022-01-27 00:00:00	2022	#####	2022	Summer Collection Men's Fashion Retail	In store	Exclusive Offer	c34700059	1	1		
a721182	Collection	Collection	2022-04-23 00:00:00	2022	#####	2022	Fall Collection Women's Fashion Retail	In store	Exclusive Offer	c58714054	1	1		
a721182	Collection	Collection	2022-04-23 00:00:00	2022	#####	2022	Fall Collection Women's Fashion Retail	In store	Exclusive Offer	c00316219	0	1		
a712159	Collection	Collection	2020-03-10 00:00:00	2020	#####	2020	Summer Collection Women's Fashion Retail	In store	Exclusive Offer	c94753179	0	1		

# AGENDA

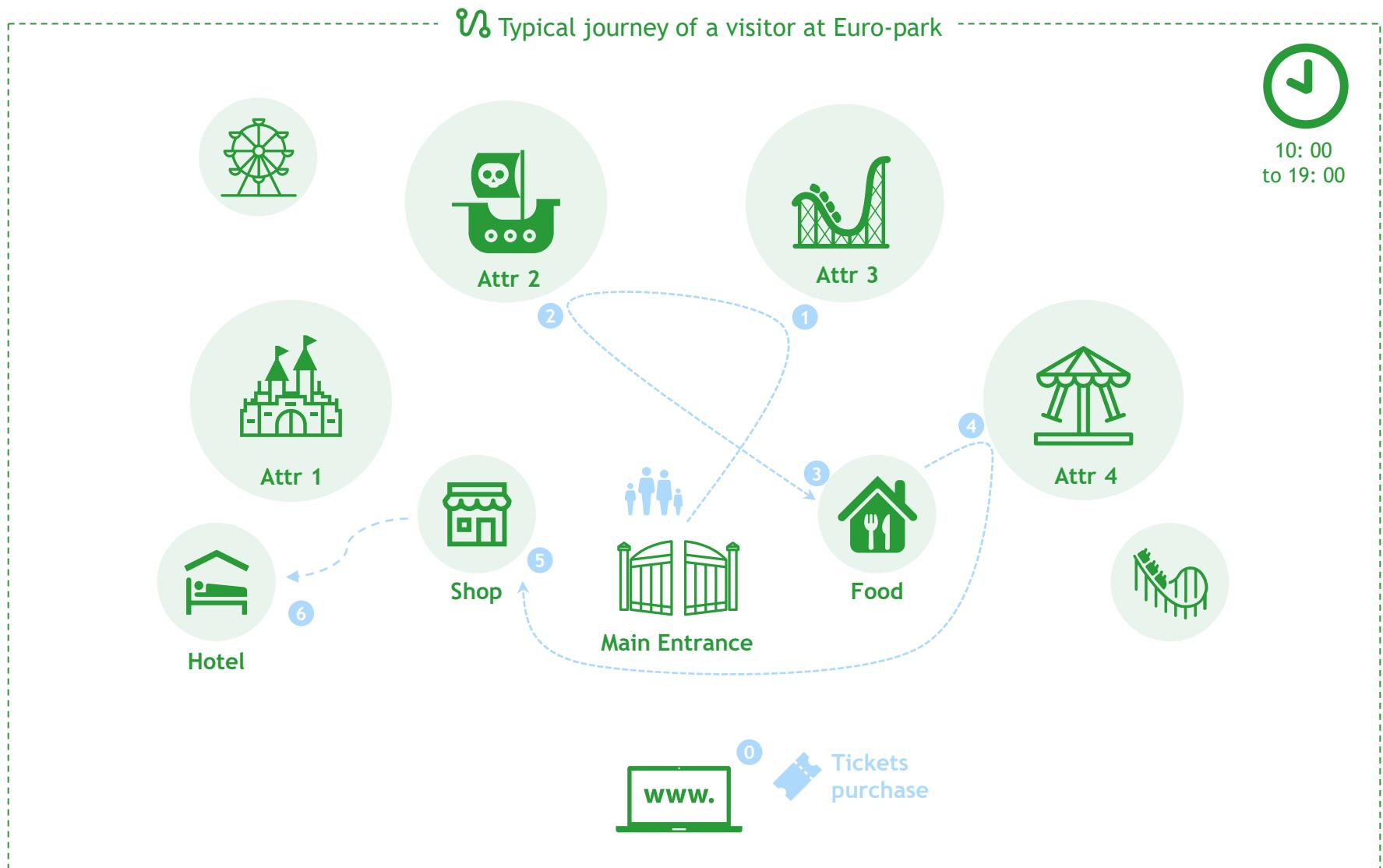
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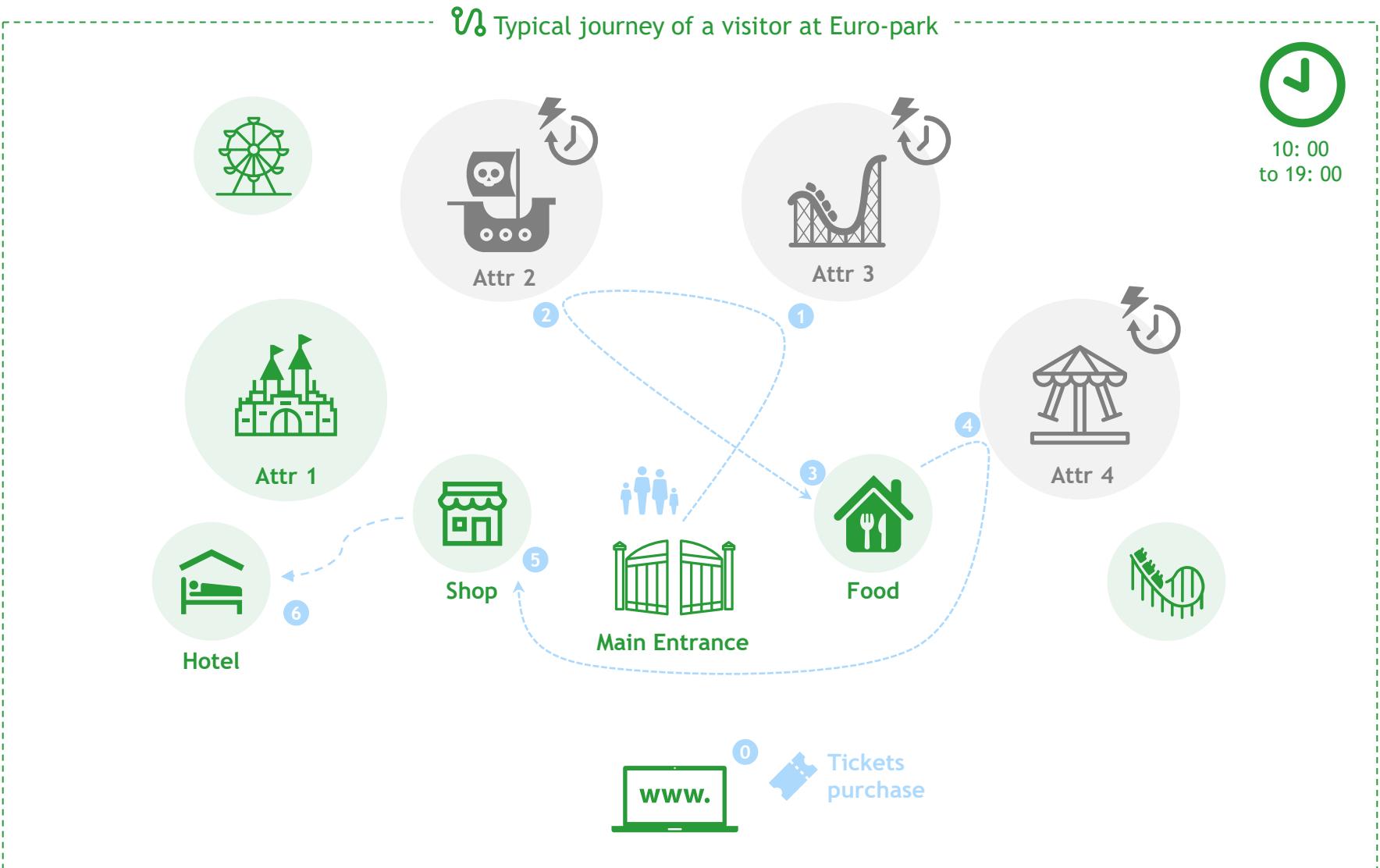
# The Endless Line

*Forecasting waiting times in a theme park to improve visitor experience*

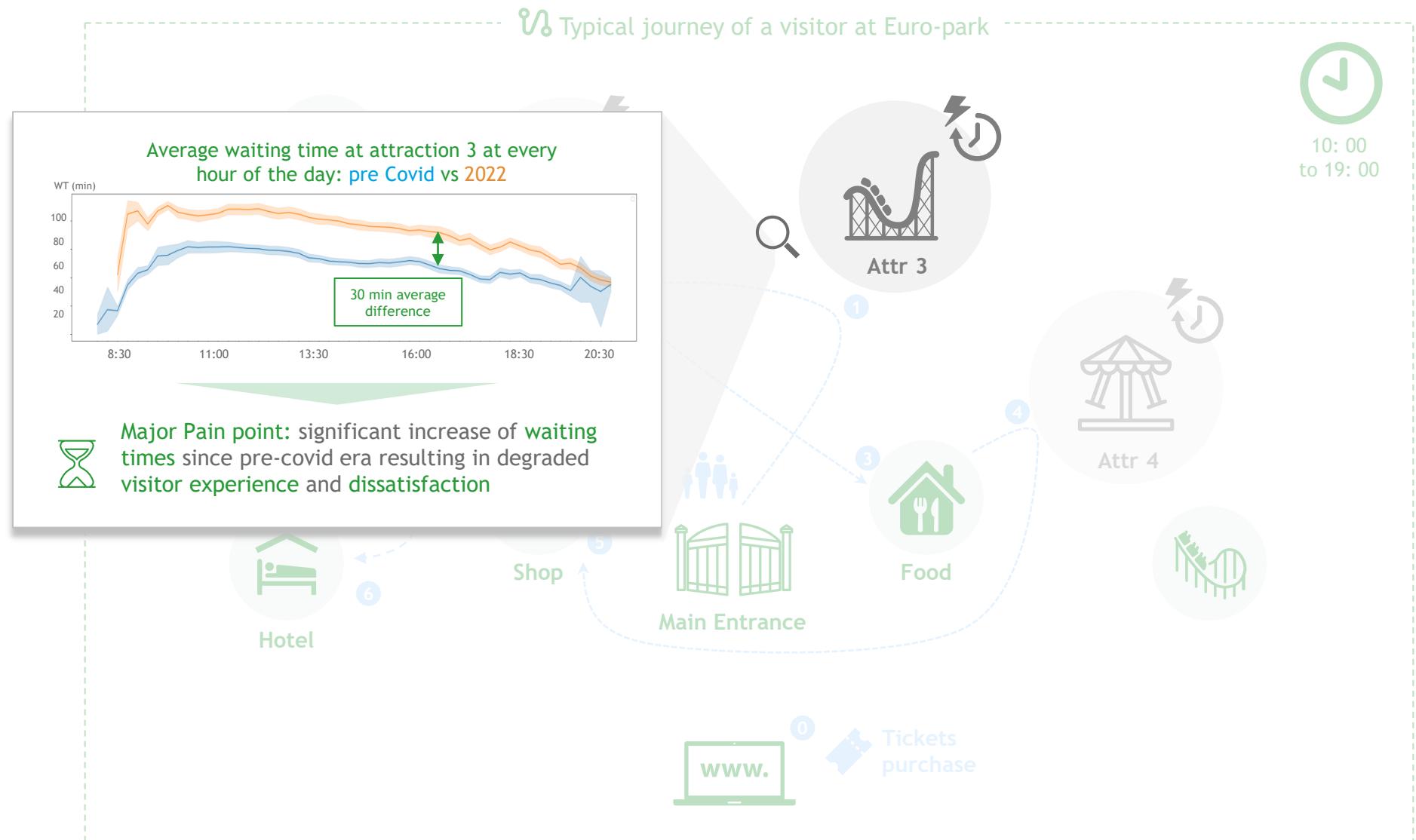
**Context:** Euro-park, a global theme park, is experiencing a significant increase of **waiting times** at attractions, which affects **visitor satisfaction** (1/3)



**Context:** Euro-park, a global theme park, is experiencing a significant increase of **waiting times** at attractions, which affects **visitor satisfaction** (2/3)



**Context:** Euro-park, a global theme park, is experiencing a significant increase of **waiting times** at attractions, which affects **visitor satisfaction** (3/3)



**Objectives:** Euro-park, therefore, wants to accurately **forecast waiting times** for its attractions and identify **use cases** to **leverage** this information to improve the park's **KPIs**

### Scope of the case study

1

How to accurately **forecast** attractions waiting times?

2

How to leverage this information to enhance Euro-park's **KPIs**?



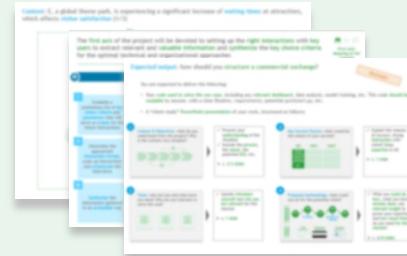
### Deliverables

```
git clone https://github.com/elevenstrategy/euro-park.git
cd euro-park
python app.py
# Run the application
# Open your browser and go to http://127.0.0.1:5000
# You will see a simple dashboard with some data visualizations.
```

1. The **code** used to build the demo tool



2. A **visual dashboard** to present the results to the client



3. A “client-ready” deck of **PowerPoint slides**

**Objectives:** Euro-park, therefore, wants to accurately **forecast waiting times** for its attractions and identify **use cases** to **leverage** this information to improve the park's **KPIs**

### Scope of the case study

1

How to accurately **forecast** attractions waiting times?

The client is looking for **medium/long term forecasts**, assuming **normal operation** of the attractions. Therefore, make sure to remove any data related to any **unplanned event**

Information to **KPIs**?

### Deliverables



1. The **code** used to build the demo tool



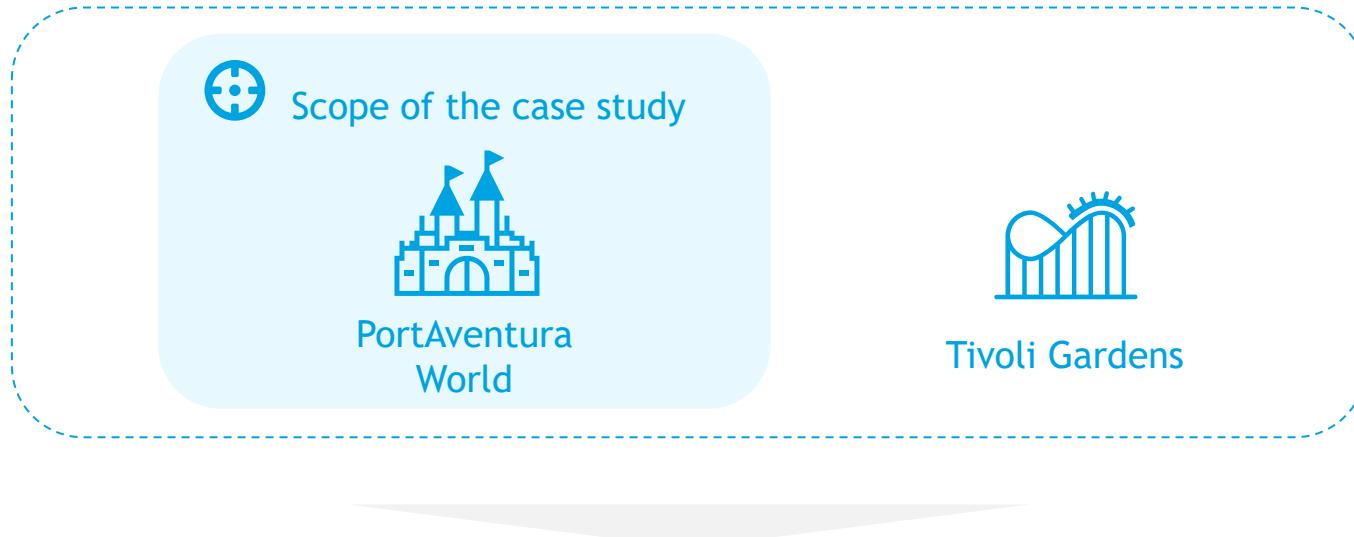
2. A **visual dashboard** to present the results to the client



3. A “client-ready” deck of **PowerPoint slides**

Data available: you have access to **past waiting times**, parks' attendance, **weather** data, schedule of **parades** and **opening/closing** times

Euro-park operates **two theme parks** in the same location: in this case study, we will focus on waiting times at **PortAventura World**



You have access to **five datasets** to perform your analyses and build your models



waiting\_times.csv



attendance.csv



entity\_schedule.csv



weather.csv



parade\_night\_show.csv



link\_attraction\_park.csv





Data available: past waiting times are provided for each attraction at a granularity of 15 minutes

15 minutes  
time slots

Waiting  
time

WORK_DATE	DEB_TIME	DEB_TIME_HOUR	FIN_TIME	ENTITY_DESCRIPTION_SHORT	WAIT_TIME_MAX	NB_UNITS	GUEST_CARRIED	CAPACITY	ADJUST_CAPACITY	OPEN_TIME	UP_TIME	DOWNTIME	NB_MAX_UNIT
01/01/2018	01/01/2018 21:00		21	01/01/2018 21:15 Roller Coaster	0 2.0	0.0	0.0	0.0	0.0	0	0	0 2.0	
01/01/2018	01/01/2018 19:30		19	01/01/2018 19:45 Bumper Cars	5 18.0	148.0	254.749	254.75	15	15	0	0 18.0	
01/01/2018	01/01/2018 22:30		22	01/01/2018 22:45 Rapids Ride	0 1.0	0.0	0.0	0.0	0	0	0	0 2.0	
01/01/2018	01/01/2018 12:45		12	01/01/2018 13:00 Crazy Dance	5 1.0	46.0	250.001	250.0	15	15	0	0 1.0	
01/01/2018	01/01/2018 17:00		17	01/01/2018 17:15 Skyway	5 15.0	92.0	211.5	198.25	15	15	0	0 16.0	
01/01/2018	01/01/2018 18:15		18	01/01/2018 18:30 Free Fall	50 3.0	0.0	0.0	0.0	0	0	0	0 3.0	
01/01/2018	01/01/2018 13:30		13	01/01/2018 13:45 Monorail	70 11.0	145.0	223.751	223.75	15	15	0	0 11.0	
01/01/2018	01/01/2018 15:00		15	01/01/2018 15:15 Roller Coaster	20 2.0	51.0	75.0	75.0	15	15	0	0 2.0	
01/01/2018	01/01/2018 18:00		18	01/01/2018 18:15 Swing Ride	50 12.0	74.0	242.25	242.25	15	15	0	0 12.0	
01/01/2018	01/01/2018 17:15		17	01/01/2018 17:30 Crazy Bus	5 6.0	271.0	353.0	353.0	15	15	0	0 6.0	
01/01/2018	01/01/2018 13:15		13	01/01/2018 13:30 Drop Tower	5 16.0	41.9999	140.25	140.25	15	15	0	0 16.0	
01/01/2018	01/01/2018 18:45		18	01/01/2018 19:00 Spinning Coaster	45 6.0	309.0	526.25	526.25	15	15	0	0 6.0	
01/01/2018	01/01/2018 21:00		21	01/01/2018 21:15 Monorail	0 11.0	0.0	0.0	0.0	0	0	0	0 11.0	
01/01/2018	01/01/2018 11:30		11	01/01/2018 11:45 Scooby Doo	60 36.0	162.0	425.0	425.0	15	15	0	0 36.0	
01/01/2018	01/01/2018 19:30		19	01/01/2018 19:45 Superman Ride	0 2.0	0.0	0.0	0.0	0	0	0	0 3.0	
01/01/2018	01/01/2018 17:30		17	01/01/2018 17:45 Spiral Slide	0 2.0	37.0	75.0	75.0	15	15	0	0 2.0	
01/01/2018	01/01/2018 22:30		22	01/01/2018 22:45 Inverted Coaster	0 1.0	0.0	0.0	0.0	0	0	0	0 3.0	
01/01/2018	01/01/2018 11:00		11	01/01/2018 11:15 Spinning Coaster	25 5.0	230.0	526.25	438.5	15	15	0	0 6.0	
01/01/2018	01/01/2018 21:30		21	01/01/2018 21:45 Water Ride	15 10.0	0.0	0.0	0.0	0	0	0	0 11.0	
01/01/2018	01/01/2018 12:45		12	01/01/2018 13:00 Water Ride	20 10.0	133.0	247.001	224.5	15	15	0	0 11.0	
01/01/2018	01/01/2018 13:15		13	01/01/2018 13:30 Power Tower	5 16.0	47.0	234.499	220.75	15	15	0	0 17.0	
01/01/2018	01/01/2018 20:15		20	01/01/2018 20:30 Roller Coaster	0 2.0	0.0	0.0	0.0	0	0	0	0 2.0	
01/01/2018	01/01/2018 13:15		13	01/01/2018 13:30 Free Fall	90 3.0	61.0	134.749	134.75	15	15	0	0 3.0	
01/01/2018	01/01/2018 11:30		11	01/01/2018 11:45 Water Ride	15 10.0	130.0	247.001	224.5	15	15	0	0 11.0	
01/01/2018	01/01/2018 11:00		11	01/01/2018 11:15 Top Spin	10 1.0	36.0	288.25	144.25	15	15	0	0 2.0	
01/01/2018	01/01/2018 17:00		17	01/01/2018 17:15 Crazy Bus	5 6.0	264.0	353.0	353.0	15	15	0	0 6.0	
01/01/2018	01/01/2018 12:15		12	01/01/2018 12:30 Log Flume	50 87.0	173.0	429.5	424.5	15	15	0	0 88.0	
01/01/2018	01/01/2018 15:30		15	01/01/2018 15:45 Oz Theatre	10 2.0	80.0	387.5	387.5	15	15	0	0 2.0	
01/01/2018	01/01/2018 18:45		18	01/01/2018 19:00 Circus Train	0 1.0	0.0	0.0	0.0	0	0	0	0 1.0	
01/01/2018	01/01/2018 11:15		11	01/01/2018 11:30 Giant Wheel	55 3.0	188.0	503.75	302.25	15	15	0	0 5.0	



Data available: you also have access to the park's daily overall attendance

USAGE_DATE	FACILITY_NAME	attendance
01/06/2018	PortAventura World	46804
01/06/2018	Tivoli Gardens	20420
02/06/2018	PortAventura World	57940
02/06/2018	Tivoli Gardens	29110
03/06/2018	PortAventura World	44365
03/06/2018	Tivoli Gardens	23727
04/06/2018	PortAventura World	37617
04/06/2018	Tivoli Gardens	15115
05/06/2018	PortAventura World	32438
05/06/2018	Tivoli Gardens	16373
06/06/2018	PortAventura World	28399
06/06/2018	Tivoli Gardens	15831
07/06/2018	PortAventura World	39436
07/06/2018	Tivoli Gardens	16587
08/06/2018	PortAventura World	36459



**Data available:** The *entity\_schedule* dataset contains all information on the **opening**, **closing** and **rehabilitation** works of attractions

REF_CLOSING_DESCRIPTION	ENTITY_DESCRIPTION_SHORT	ENTITY_TYPE	DEB_TIME	FIN_TIME	UPDATE_TIME	WORK_DATE
	Tivoli Gardens	PARK	19/11/2018 10:00	19/11/2018 18:00	20/11/2018 08:24	19/11/2018
	Dizzy Dropper	ATTR	07/04/2022 08:30	07/04/2022 22:04	08/04/2022 08:00	07/04/2022
	Sling Shot	ATTR	28/03/2018 08:37	28/03/2018 18:12	29/03/2018 08:24	28/03/2018
	Gondola	ATTR	11/04/2019 09:55	11/04/2019 20:19	12/04/2019 08:59	11/04/2019
	Monorail	ATTR	29/06/2019 08:30	29/06/2019 20:35	30/06/2019 08:14	29/06/2019
Fermeture Réhab	Top Spin	ATTR	07/04/2019 23:59	07/04/2019 23:59	08/04/2019 07:40	07/04/2019
	PortAventura World	PARK	17/07/2018 08:30	17/07/2018 09:30	18/07/2018 07:48	17/07/2018
	Skyway	ATTR	13/12/2019 08:23	13/12/2019 18:02	14/12/2019 07:59	13/12/2019
	Sling Shot	ATTR	21/07/2018 08:33	21/07/2018 20:13	22/07/2018 07:46	21/07/2018
	Gondola	ATTR	11/11/2019 09:00	11/11/2019 18:22	12/11/2019 07:18	11/11/2019
	Tivoli Gardens	PARK	19/04/2019 08:30	19/04/2019 09:30	20/04/2019 07:43	19/04/2019
	PortAventura World	PARK	28/02/2019 08:30	28/02/2019 09:30	01/03/2019 09:23	28/02/2019
Fermeture Réhab	Kiddie Coaster	ATTR	21/02/2018 23:59	21/02/2018 23:59	22/02/2018 08:36	21/02/2018
	PortAventura World	PARK	18/08/2019 08:30	18/08/2019 09:30	19/08/2019 07:34	18/08/2019
Fermeture Opérationnelle	Oz Theatre	ATTR	04/09/2018 23:59	04/09/2018 23:59	05/09/2018 08:12	04/09/2018
	PortAventura World	PARK	05/02/2020 10:00	05/02/2020 19:00	06/02/2020 08:09	05/02/2020
	Free Fall	ATTR	04/01/2020 08:11	04/01/2020 18:15	05/01/2020 07:52	04/01/2020
	Tivoli Gardens	PARK	04/05/2018 08:30	04/05/2018 09:30	05/05/2018 11:16	04/05/2018
Fermeture Opérationnelle	Oz Theatre	ATTR	24/06/2018 23:59	24/06/2018 23:59	25/06/2018 08:03	24/06/2018
	Giga Coaster	ATTR	08/04/2019 09:25	08/04/2019 21:00	09/04/2019 07:45	08/04/2019
	Tivoli Gardens	PARK	29/01/2020 08:30	29/01/2020 09:30	03/02/2020 15:22	29/01/2020
	Inverted Coaster	ATTR	15/09/2018 09:55	15/09/2018 18:20	16/09/2018 08:38	15/09/2018
	Himalaya Ride	ATTR	05/06/2018 10:00	05/06/2018 23:00	06/06/2018 07:27	05/06/2018
	Water Ride	ATTR	02/05/2019 08:30	02/05/2019 21:14	05/06/2019 09:12	02/05/2019



Data available: The hourly weather at the park was also made available

dt_iso	temp	visibility	feels_like	temp_min	temp_max	wind_gust	rain_1h	rain_3h	snow_1h	snow_3h	clouds_all	weather_main	weather_description	weather_icon
1999-01-01 00:00:00 +0000 UTC 8.33	5.28	8.14	9.32								8	Clear	sky is clear	01n
1999-01-01 01:00:00 +0000 UTC 8.08	5.18	7.94	9.32								6	Clear	sky is clear	01n
1999-01-01 02:00:00 +0000 UTC 8.08	5.38	7.94	8.74								14	Clouds	few clouds	02n
1999-01-01 03:00:00 +0000 UTC 7.31	4.42	7.14	8.62								39	Clouds	scattered clouds	03n
1999-01-01 04:00:00 +0000 UTC 6.91	4.0	6.74	8.32								52	Clouds	broken clouds	04n
1999-01-01 05:00:00 +0000 UTC 5.45	2.35	4.6	7.32								52	Clouds	broken clouds	04n
1999-01-01 06:00:00 +0000 UTC 5.63	2.57	4.6	7.62								57	Clouds	broken clouds	04n
1999-01-01 07:00:00 +0000 UTC 5.64	2.38	3.6	7.32								65	Clouds	broken clouds	04n
1999-01-01 08:00:00 +0000 UTC 5.99	2.69	4.6	6.94								61	Clouds	broken clouds	04d
1999-01-01 09:00:00 +0000 UTC 6.72	3.42	5.6	7.97								83	Clouds	broken clouds	04d
1999-01-01 10:00:00 +0000 UTC 7.01	3.97	5.6	8.77								89	Clouds	overcast clouds	04d
1999-01-01 11:00:00 +0000 UTC 9.41	7.22	8.6	11.77								92	Clouds	overcast clouds	04d
1999-01-01 12:00:00 +0000 UTC 10.98	10.14	10.6	11.47								73	Clouds	broken clouds	04d
1999-01-01 13:00:00 +0000 UTC 10.8	9.92	10.6	12.32								32	Clouds	scattered clouds	03d
1999-01-01 14:00:00 +0000 UTC 12.09	11.34	11.32	12.77								52	Clouds	broken clouds	04d
1999-01-01 15:00:00 +0000 UTC 11.6	10.83	10.92	11.94								42	Clouds	scattered clouds	03d
1999-01-01 16:00:00 +0000 UTC 10.38	9.61	8.77	10.94								32	Clouds	scattered clouds	03d
1999-01-01 17:00:00 +0000 UTC 9.69	7.88	8.32	9.94								8	Clear	sky is clear	01n
1999-01-01 18:00:00 +0000 UTC 7.93	5.59	6.07	8.6								8	Clear	sky is clear	01n
1999-01-01 19:00:00 +0000 UTC 7.69	5.29	6.74	8.32								19	Clouds	few clouds	02n
1999-01-01 20:00:00 +0000 UTC 6.8	4.17	6.6	7.32								79	Clouds	broken clouds	04n
1999-01-01 21:00:00 +0000 UTC 6.56	3.86	6.14	6.72								100	Clouds	overcast clouds	04n
1999-01-01 22:00:00 +0000 UTC 5.91	2.97	5.74	6.32								98	Clouds	overcast clouds	04n
1999-01-01 23:00:00 +0000 UTC 5.91	2.8	5.74	6.32								94	Clouds	overcast clouds	04n
1999-01-02 00:00:00 +0000 UTC 5.78	2.29	5.44	6.32								100	Clouds	overcast clouds	04n
1999-01-02 01:00:00 +0000 UTC 5.91	2.2	5.74	6.32								100	Clouds	overcast clouds	04n
1999-01-02 02:00:00 +0000 UTC 6.74	3.04	5.74	7.32								100	Clouds	overcast clouds	04n
1999-01-02 03:00:00 +0000 UTC 6.64	2.74	6.64	6.92								100	Clouds	overcast clouds	04n
1999-01-02 04:00:00 +0000 UTC 6.91	2.94	6.74	7.32								100	Clouds	overcast clouds	04n

# AGENDA

1. About eleven
2. Structure of a commercial exchange
3. Case presentations
  - a) The Invit(ai)tion
  - b) The Endless Line
4. General information
  - a) Expected output
  - b) Practical information

# Expected output: how should you structure a commercial exchange?

Reminder

You are expected to deliver the following:

- Your code used to solve the use case, including any relevant dashboard, data analysis, model training, etc. This code should be readable by anyone, with a clear *Readme*, *requirements*, potential *quickstart.py*, etc.
- A “client-ready” PowerPoint presentation of your work, structured as follows:

1

**Context & Objectives:** what do you understand from the project? Why is the context very complex?



- ✓ Present your understanding of the situation
- ✓ Include the process, the needs, the potential ROI, etc.

➤ c. 2/3 slides

2

**Key Success Factors:** what would be the reason of your success?

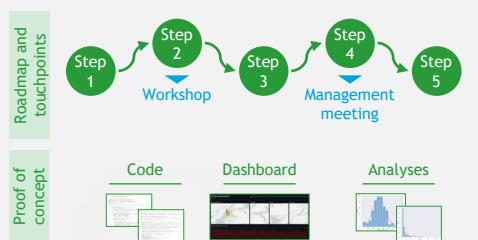
KSF	WHY?	HOW?
Business oriented		
Hands-on approach		
etc.		

- ✓ Explain the reasons of success: strong interaction with client? Deep expertise in AI?

➤ c. 1 slide

3

**Proposed methodology:** what could you do for the potential client?

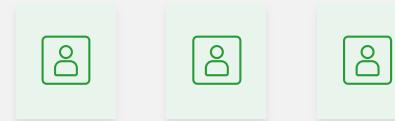


- ✓ What you could do, how, what you have already done, any relevant insight to prove your expertise and how much time do you need for the mission!

➤ c. 6/8 slides

4

**Team:** who are you and what have you done? Why are you relevant to solve the case?



- ✓ Introduce yourself, your background and explain why you are relevant for this mission

➤ c. 1 slide

# 1 Context & Objectives: example of potential output

For illustration



## 2 Key Success Factors: example of potential output

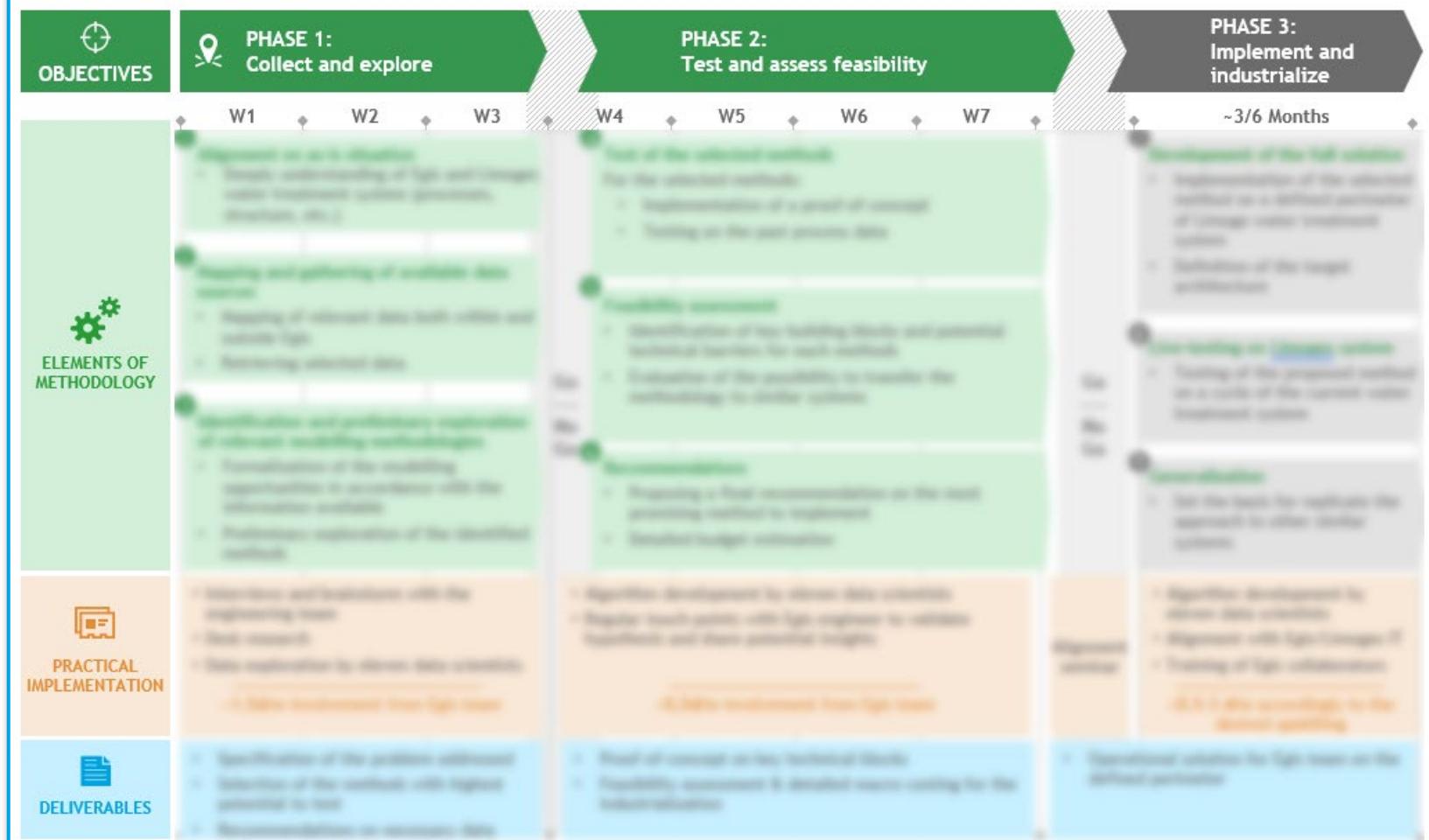
For illustration

Based on past experiences, eleven has identified **five key success factors** to successfully launch a first AI initiative

KEY SUCCESS FACTORS	WHY?	HOW?
1 FOLLOW A BUSINESS-ORIENTED ADOPTION OF AI		
2 ONBOARD THE TEAMS AND BUSINESS STAKEHOLDERS EARLY		
3 MASTER AI TOOLS AND METHODOLOGY		
4 START SMALL THEN ITERATE		
5 FOLLOW A HANDS-ON APPROACH		

*For illustration*

eleven suggests to carry out Egis mission following **two phases** in order to **remove potential technological barriers** before launching the implementation phase



For illustration



5. Planning

Progressing on three axes, [1] a **mapping of requested usages**, [2] a **gap analysis** with what the existing solutions cover, and [3] **synthesis of recommendation**, the project would extend over a **three-month period**



For illustration



6. Approach

The approach is structured around **three complementary axes** leading to several **deliverables** at each step of the project

eleven's suggested approach



The first sets of the project will be devoted to setting up the right interactions with key users to extract relevant and valuable information and synthesize the key choices criteria for the project technical and organizational approaches.

## For illustration

# AGENDA

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# Schedule for the five days: the timing may be short, do not hesitate to split the work between the members of the team



*For illustration*

	Monday 19 <sup>th</sup>	Tuesday 20 <sup>th</sup>	Wednesday 21 <sup>st</sup>	Thursday 22 <sup>nd</sup>	Friday 23 <sup>rd</sup>
AM session	<p>Kick-off (9:00 am)</p> <p>In-depth understanding &amp; Q&amp;A (Room PAR 6-7)</p> <p>We will move between the groups to answer the different questions and help you structure the case study</p>	<p><b>Business</b></p> <ul style="list-style-type: none"> <li>✓ Present your team and your relevance for the mission</li> <li>✓ Describe the value chain of the client and identify the potential untapped levers and/or pain points</li> </ul> <div style="text-align: center;">  Data  </div> <ul style="list-style-type: none"> <li>✓ Start data exploration and cleaning</li> <li>✓ Confirm analyses to be led or models to be used (e.g., define target variable, metrics etc.)</li> </ul>	<p><b>Business</b></p> <ul style="list-style-type: none"> <li>✓ Work on the story-line of your commercial proposal</li> <li>✓ Start brainstorming about possible usage of your solution for the client</li> </ul> <div style="text-align: center;">  Data  </div> <ul style="list-style-type: none"> <li>✓ Keep building relevant features</li> <li>✓ Build more advanced models</li> <li>✓ Select evaluation metrics and setup an hyperparameter optimization pipeline</li> </ul>	<p><b>Business</b></p> <ul style="list-style-type: none"> <li>✓ Rehearse your pitch to make it impactful</li> <li>✓ Be prepared with all your speakers knowing their part</li> </ul> <div style="text-align: center;">  Data  </div> <ul style="list-style-type: none"> <li>✓ Finalize your dashboard</li> <li>✓ Clean your code and write a doc</li> </ul>	<p><b>Q&amp;A business (remote)</b></p> <ul style="list-style-type: none"> <li>✓ 30' per group</li> <li>✓ Planning on slack</li> </ul>
PM session	<p><b>Business</b></p> <ul style="list-style-type: none"> <li>✓ Ensure your understanding of the value chain of the potential client</li> <li>✓ Split the work between the team</li> </ul> <div style="text-align: center;">  Data  </div> <ul style="list-style-type: none"> <li>✓ Collect and explore the data</li> <li>✓ Validate the analysis you would like to perform with the provided data</li> </ul> <p><i>Start sliding quickly, last minute slides could lead to poor final work quality</i></p>	<p><b>Business</b></p> <ul style="list-style-type: none"> <li>✓ Identify the Key Success Factors</li> <li>✓ Start working on the methodology you could use to deliver a solution</li> </ul> <div style="text-align: center;">  Data  </div> <ul style="list-style-type: none"> <li>✓ Train a baseline model</li> <li>✓ Build relevant features</li> </ul>	<p><b>Q&amp;A tech (remote)</b></p> <ul style="list-style-type: none"> <li>✓ 30' per group</li> <li>✓ Planning on slack</li> </ul>	<p><b>Business</b></p> <ul style="list-style-type: none"> <li>✓ Synthesize the preliminary results of the model</li> <li>✓ Start evaluating the added-value your solution could provide to your potential client</li> </ul> <div style="text-align: center;">  Data  </div> <ul style="list-style-type: none"> <li>✓ Start building a dashboard to present your results</li> <li>✓ Keep enriching and optimizing your models</li> </ul>	<p><b>Business</b></p> <ul style="list-style-type: none"> <li>✓ Finish gathering preliminary insights from your models and deduce preliminary recommendations</li> <li>✓ Finalize structuring your story-line</li> </ul> <div style="text-align: center;">  Data  </div> <ul style="list-style-type: none"> <li>✓ Take a step back: evaluate the quality of your models, and select the most appropriate one</li> <li>✓ Keep building the dashboard</li> </ul>

: Paris campus

: Remote

# Detailed schedule for the Q&A sessions



Provisional  
schedule \*\*

## Q&A sessions \*

### Q&A sessions (Tuesday 20th - remote)

*This group session will be dedicated to technical questions*

#### The Invit(ai)tion

#### The Endless Line

2pm-2:30pm

Team  
1-3-5-7-9

Team  
2-4-6-8-10

2:30pm-3pm

Team  
11-13-15-17-19

Team  
12-14-16-18-20

### Q&A sessions (Thursday 22<sup>nd</sup> - remote)

*This individual sessions will be dedicated to slide review*

#### The Invit(ai)tion

#### The Endless Line

10:30am-  
10:40am

Team 1

Team 3

Team 2

Team 4

10:40am-  
10:50am

Team 5

Team 7

Team 6

Team 8

10:50am-  
11:00am

Team 9

Team 11

Team 10

Team 12

11:00am-  
11:10am

Team 13

Team 15

Team 14

Team 16

11:10am-  
11:20am

Team 17

Team 19

Team 18

Team 20

\* Q&A sessions will be led by two eleven consultants per topic: each group will be followed by one consultant throughout the week

\*\* Time slots and groups repartition may be updated during the Hackathon: any change of time will be notified on Slack

# Detailed schedule for the pitch sessions



## Pitch sessions

Pitch sessions (PAR 13-14) - Friday 23rd		
	The Invit(ai)tion (Room PAR 13)	The Endless Line (Room PAR 14)
9am-9:20am		
9:20am-9:40am	Team 1	Team 2
9:40am-10:00am	Team 3	Team 4
10:00am-10:10am	Team 5	Team 6
10:10am-10:30am	Break	Break
10:30am-10:50am	Team 7	Team 8
10:50am-11:10am	Team 9	Team 10
11:10am-11:20am	Team 11	Team 12
11:20am-11:40am	Break	Break
11:40am-12:00am	Team 13	Team 14
12:20am-12:40am	Team 15	Team 16
12:40am-01:00pm	Team 17	Team 18
	Team 19	Team 20

Provisional  
schedule \*\*

\*\* Time slots and groups repartition may be updated during the Hackathon: any change of time will be notified on Slack

## Final presentation details and best practices:

On Friday 23<sup>rd</sup>, you will have to present your work in front of a **jury** during a **closed-door session**

The modalities of the presentation will be as follow:

- **10min group pitch** based on a PowerPoint presentation
- **~5min Q&A session** with the jury
- **~5min debrief** from the jury

For each case, a winner will be announced. The two winner groups will then **present their work to the other students** (same modalities with questions from the students)

---

The presentation must be **as professional as possible**. Here are some advices and best practices that may be useful:



- **Structure your presentation:** start by stating the problem that you want to solve, then present the way you tackled it, and finally describe your solution. The “story” of the presentation should be natural and easy to follow
- **Be concise and precise:** focus on the most important messages, as you only have 10 minutes to present the work achieved. You should limit the number of slides you present (you can still add appendices if needed)
- **Be organized as a team:** split up the speaking time between the team members beforehand to make it smoother
- **Be honest:** tell where you encountered issues or challenges
- **C-suite level:** you should convince both the CEO and the CTO/CDO of the company

## Evaluation criteria:

Although different in their essence, the cases will be graded based on **similar criteria**.

NB: any **provided code will be tested** in order to confirm its good functioning.

*\*The contribution of each criteria may not reflect the actual value of each step for a commercial exchange*

Topic	Description	Contribution to the final grade*
Business aspect	Engagement The <b>engagement</b> of the team during the exercise (how far you've gone, how autonomous you have been, how much you have asked questions when stuck, etc.)	2 points
	Presentation quality The <b>quality of your final presentation</b> : how professional it looks ( <b>slide quality</b> ), how clear and complete it is ( <b>storytelling</b> ), how pertinent your answers are, etc.	3 points
	Business methodology The <b>creativity</b> and <b>relevance</b> of the <b>methodology</b> (i.e., scientific approach) you choose regarding the problem you try to solve, and the data provided, the <b>business sense</b> behind your <b>methodology</b> and the <b>pragmatism</b> of your <b>presentation</b>	6 points
Technical aspect	Technical choices The explanation of your <b>technical choices</b> and your <b>ability to present them</b> in non-technical terms	3 points
	Model efficiency or Analysis relevance The <b>performance</b> of your model (specific to each case), the <b>relevance</b> for the <b>problem in question</b> , the <b>quality</b> of the <b>analysis</b> led	5 points
	Code good practices Your code must be <b>well structured</b> , <b>easy to run</b> and <b>easy to understand</b> with clear readme and requirements.	1 point

Please note that all groups will be graded at the end of the week

# The Slack workplace

For this challenge, we opened a **Slack workplace** for you to ask your questions when eleven consultants are not on campus

On this workplace, you will find three channels:

- 1) **#general**: for all questions and information related to the organization of the challenge
- 2) **#case-1-the-endless-line**: for all questions specifically related to *TheEndlessLine* case
- 3) **#case-2-the-invitation**: for all questions specifically related to *InvitedOrNotInvited* case

Additional information may also be pinned in these channels (schedules, classroom numbers, etc.)

*Please use the right channel to ensure fluidity of the interactions*

*Before asking something, also make sure that the requested information has not been given already ;)*



Scan to join  
or use [the link](#)

*You may download the slack application on your device or access it via your usual browser*

# Download instructions & submission process

## How to download datasets?

You can **download datasets** and potential additional information at the following links:

### - Case #1: TEL - [get your files here](#)

... > Hackathon Eleven > 2023 - Hackathon HEC-X > 2. student > toshare > Case2 - TEL			
Nom	Modifié	Modifié par	Ajouter une colonne
attendance.csv	Il y a 2 heures	Pierre LAVIEILLE	
entity_schedule.csv	Il y a 2 heures	Pierre LAVIEILLE	
glossary.xlsx	Il y a 2 heures	Pierre LAVIEILLE	
link_attraction_park.csv	Il y a 2 heures	Pierre LAVIEILLE	
parade_night_show.xlsx	Il y a 2 heures	Pierre LAVIEILLE	
waiting_times.csv	Il y a 2 heures	Pierre LAVIEILLE	
weather_data.csv	Il y a 2 heures	Pierre LAVIEILLE	

### - Case #2: INV - [get your files here](#)

... > Hackathon Eleven > 2. student > toshare > Case1 - INV			
Nom	Modifié	Modifié par	Ajouter une colonne
actions.csv	Il y a quelques secondes	Pierre LAVIEILLE	
clients.csv	Il y a quelques secondes	Pierre LAVIEILLE	
transactions.csv	Il y a quelques secondes	Pierre LAVIEILLE	

## How to submit your works?

Each group will receive a [link by email](#) with a Sharepoint folder to submit their assignment (both Presentation + Code)



## Notes:

- You can organize your folder as you wish.
- You can keep old files that should not be submitted to the jury in a *O\_Archives* folder



Now is your turn!

- ✓ Find your groups of 5/6 people and choose a subject
- ✓ Put yourself in a data consultant's shoes: start structuring your approach and start exploring the data
- ✓ We will be here until 1: 00 pm to validate your approach and answer your questions



Emma, coach for  
« The Endless Line »



Victor, coach for  
« The Endless Line »



Pierre, coach for  
« The Invit(ai)tion »



Gabriel, coach for  
« The Endless Line »

# Enjoy the challenge!